

### **REMARKS**

The Official Action mailed February 9, 2007 has been carefully considered. Reconsideration and allowance of the subject application, as amended, are respectfully requested. Claims 1 and 14 have been amended to overcome the Examiner's claim rejections under 35 USC § 112. Also, it is noted with thanks the Examiner's withdrawal of the rejection under 35 USC § 101. No new matter has been added to the subject application as a result of the changed made thereto.

As an initial matter, Applicants appreciate the Examiner's careful attention to this application, and the Examiner's thoughtful comments regarding the Applicants' response to the previous office action.

Turning to the rejections on the art, claims 1-24 stand rejected under 35 USC § 103 as being unpatentable over Douceur in view of Greene. In particular, the Examiner points to column 4, lines 21-28 as disclosing splitting the hash into a index and a signature and column 1, line 25 to column 2, line 37 as retrieving a second data unit using the index value and a position of the signature value. However, Applicants respectfully disagree with the Examiner's characterization of Douceur, as set forth below.

It is Applicants' understanding that Douceur teaches the use of hash tables used in conjunction with internal databases and methods of dynamically expanding and contracting internal hash tables without causing significant variance in record insertion times. In particular, and with specific reference to the Examiner's reliance on Douceur as noted above, Douceur appears to teach data retrieval in the context of linked lists.

For example, column 1, lines 45-60 describe the context of the data structure as a linked lists. Also, column 2, lines 25-35 describe examples of searching for a data record associated with a key value in a linked list.

Applicants also draw the Examiner's attention to column 3, line 29 through column 4, line 45. While Applicants agree that Douceur does disclose the concept of an index and a signature value, it is important to draw a distinction between the use of a signature value and index as provided by Douceur and that provided by Applicants' claimed invention. For example, Douceur discloses that the concept of comparing signature values rather than the entire search key. However, and significantly, Douceur also describes that "address generation must be

performed for both insertion and retrieval operations. For retrieval, the next step is to scan through the linked list pointed to by the address location in the hash table.” (Column 3, lines 59-62.) Moreover, Douceur discloses “if signature values are employed, then the records in each linked list can be sorted according to the signature instead of the key values.” (Column 4, lines 32-35).

Thus, while Douceur does appear to disclose the concepts of index values and signature values, it appears that Douceur uses these concepts in the context of a linked list. In contrast, the invention of independent claims 1 and 14 each disclose apparatus that, by virtue of the first memory array the comparator and the second memory array, provide for a hash-based lookup system that avoids the problems of serial reads throughout linked list data structures. (See, Application, Background Section). Moreover, by examining the generated signature’s position within a data unit in a first memory array, the payload data’s position in the second memory array may be determined and thus, permits the claimed apparatus to avoid traipsing across multiple entries as in the linked system. (Applicants’ specification, page 4, paragraph 16).

In particular, Applicant’s invention of independent claim 1 requires:

- Apparatus for use in data retrieval, comprising:
  - a hash value generator configured to generate an index value and a signature value, based on input data,
  - a first memory array configured to receive the index value as an address, said first memory array is further configured to output, in response to said index value, a data unit comprising a plurality of signature values arranged in respective positions in said data unit,
  - a comparator configured to receive the signature value and said data unit from the first memory array, the comparator is further configured to compare the signature value with the plurality of signature values of said data unit, and if a match is found, said comparator is further configured to generate said address of said index value and the position corresponding to the matching signature values, and
  - a second memory array configured to receive said address of said index value and the position corresponding to the matching signature values and, in response thereto, output payload data.

Applicants’ invention of independent claim 14 requires similar limitations.

Simply stated, nowhere does Douceur disclose or suggest the combination of features as provided by Applicants’ invention of independent claims 1 or 14. Moreover, Douceur appears to

teach away from the invention of independent claims 1 and 14 since it appears that Douceur is describing data retrieval in a linked list. The combination of features set forth in claims 1 and 14 resolve problems associated with linked list system, as described herein and as described in detail in Applicants' specification.

The Examiner recognizes that Douceur does not specifically teach finding a second index based on the information found at the location where the match was found, combining the second index with the original index to find the address where the data to be retrieved is stored. (Official Action, pages 9 and 10). However, the Examiner points to Greene as teaching generating an address based on part of the input data, finding the information stored at the generated address, and using the information stored at the generated address as a secondary index to be combined with the generated address to determine another address where the data is located. (See, for example, figure 1 or 23 and the associated text of Greene). (Official Action, page 10). The Examiner concludes that "Greene teaches the limitation of a second memory array having inputs coupled to the index value output and the output of the comparator, the second memory array being configured to provide data being retrieved." (Official Action, page 10).

Applicants respectfully disagree with the Examiner's characterization of Greene. It is Applicants' understanding that Greene discloses a system that receives a multi-bit input value and splits it into a number of portions. A first portion can generate a first address that accesses a first array. A first array can provide output values or second array pointer values. Second array pointer values may be combined with a second portion to generate a second address. This concept can be applied to multi arrays to provide output values. (Greene, Abstract).

However, as set forth above, the specific features of the first memory array, the comparator, and the second memory array are simply not disclosed or suggested in Greene. Moreover, this specific combination of features now required by the invention of independent claims 1 and 14, as amended, are nowhere disclosed or suggested in any combination of Greene and Douceur. Further, as noted above, since Douceur appears to teach away from the claimed invention, Applicants respectfully submit that it is inappropriate to combine Greene and Douceur to achieve or render obvious Applicants' claimed invention, since such a combination would not arrive at the features set forth in independent claims 1 and 14. Accordingly, it is respectfully

submitted that the Examiner's rejection of claims 1-24 as being unpatentable over Douceur in view of Greene is in error and should be withdrawn.

Claims 25-36 stand rejected under 35 USC § 102(b) as being anticipated by Douceur. Applicants respectfully submit this rejection is in error.

Applicants' invention of independent claim 25 has been amended to positively recite that the first data unit is retrieved from a first memory array and the second data unit is retrieved from a second memory array. Otherwise, claim 25 contains similar limitations as Applicants' invention of independent claims 1 and 14, discussed above in detail. Likewise, Applicants' invention of independent claim 33 requires retrieving a first data unit from a first memory array and retrieving a second data unit from a second memory array.

In sum, nowhere does Douceur disclose or suggest the methodology provided by Applicants' invention of independent claims 25 and 33, since Douceur, appears to teach away from the concept of avoiding serial reads in a linked list system.

Having dealt with all the objections raised by the Examiner, it is respectfully submitted that the present application, as amended, is in condition for allowance. Thus, early allowance is earnestly solicited.

If the Examiner desires personal contact for further disposition of this case, the Examiner is invited to call the undersigned Attorney at 603.668.6560.

In the event there are any fees due, please charge them to our Deposit Account No. 50-2121.

Respectfully submitted,

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